ACNET and Shot Setup

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Ace Training
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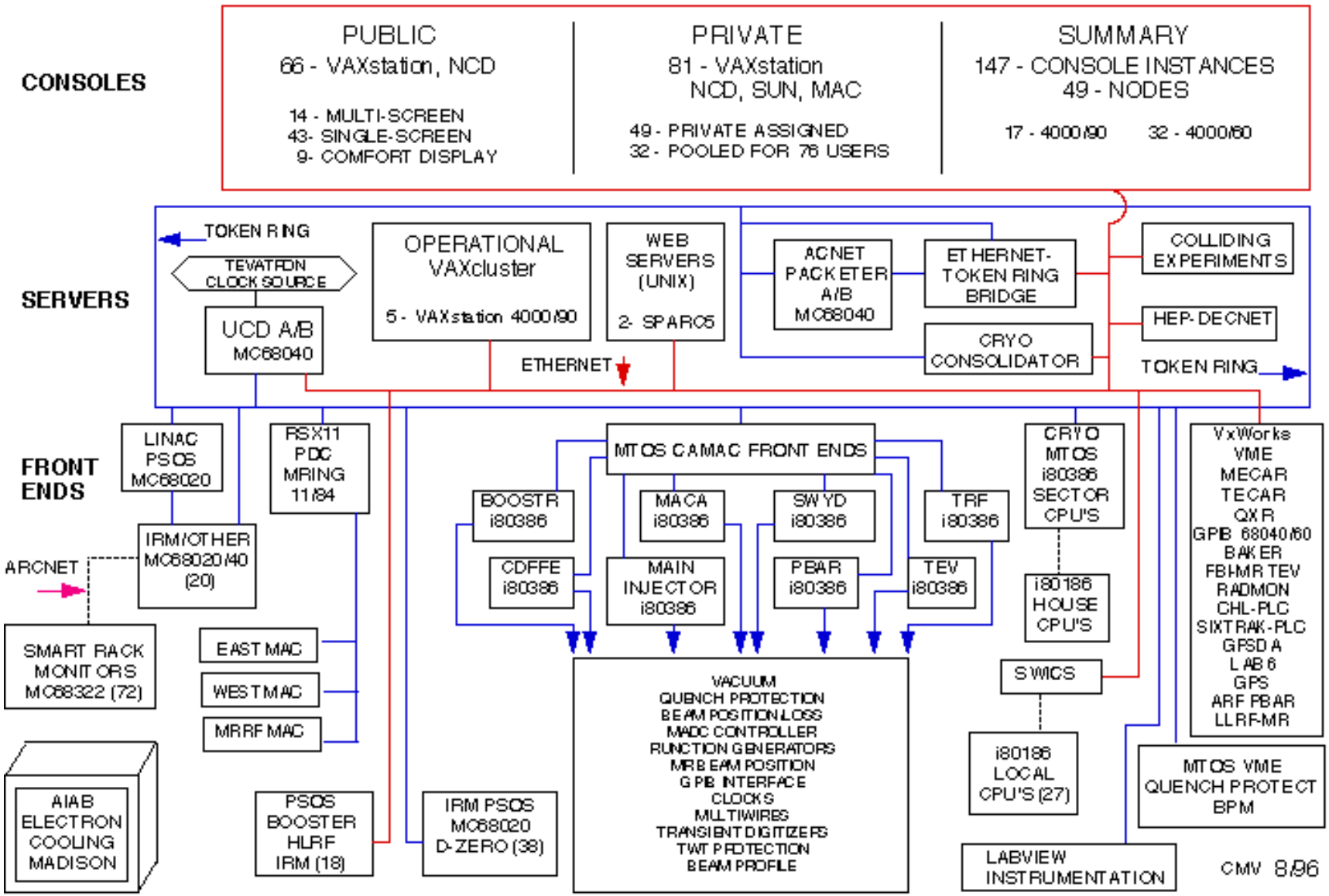
What is ACNET ?

- Accelerator Network
  - AcNet includes hardware, software, protocol for exchanging information,….
- Developed by the FNAL Controls Group
- Monitor and control devices throughout the accelerator and experimental areas
  - Beam currents
  - Luminosity
  - Losses
  - Over 100,000 devices total !
- Records historical information in “dataloggers”

- ACNET control/monitoring software runs on VAXes (VMS) and can create a virtual display console on machines running X-Windows. The VAXes are called consoles. CDF uses Windows 2000 PCs for the display machines.
- If interface seems unusual, it might have to do with the fact that ACNET was developed in the early 1980's to run on PDP-11's (and later on micro-Vaxes).
- There is an ACNET display PC in first floor counting room if you want to practice alone. Do NOT experiment outside of CDF procedures. It is possible to turn off the Tevatron from ACNET.
- But the best way to learn is hands-on practice with old ACE or other expert (like Steve Hahn!) looking over your shoulder.
- Our ACNET display PCs are physically connected to a Beams Division network. (and speaking of networks…)

Outdated but conceptually correct.

FERMILAB ACCELERATOR CONTROL SYSTEM



Starting ACNET

- ACNET display runs on PCs on the West side of the Control Room – racks 2RR03G and 2RR05B – and in 1st floor counting room.
- Should already be running.
- **Automatically starts after reboot** (one way to recover from a problem). (Be patient – it takes a few minutes.)
- If it crashes or is unresponsive, do this to get it going again:
  - START
    - Programs
    - Acnet
    - Cnsrun

Navigating in ACNET

- You will type wherever the cursor is.
- Move the cursor over the character where you want to type.
- Left mouse button works like “return” (text changes color).
- On index page, either click on the page number, or type in Top Left Corner.
- To get back to the index page, type letter of desired index page in the Top Left Corner.

Many Index Pages

B – Booster
C – Collider
D – Diagnostic/Utility
E – Experimental
I - Main Injector
L – Linac
P - PBar
R – Recycler
T - Tevatron

Some Useful and Essential Pages

- C65 Collider Luminosity
- D44 Lumberjack Plotter – plot stored data
- E8 Downtime Data Logger
- E11 E-Z Writer – livetime plots
- E2 SVX Loss Monitor
- E6 Silicon Radiation Monitoring
- E7 Monitor Store

WHAT YOU NEED TO LEARN

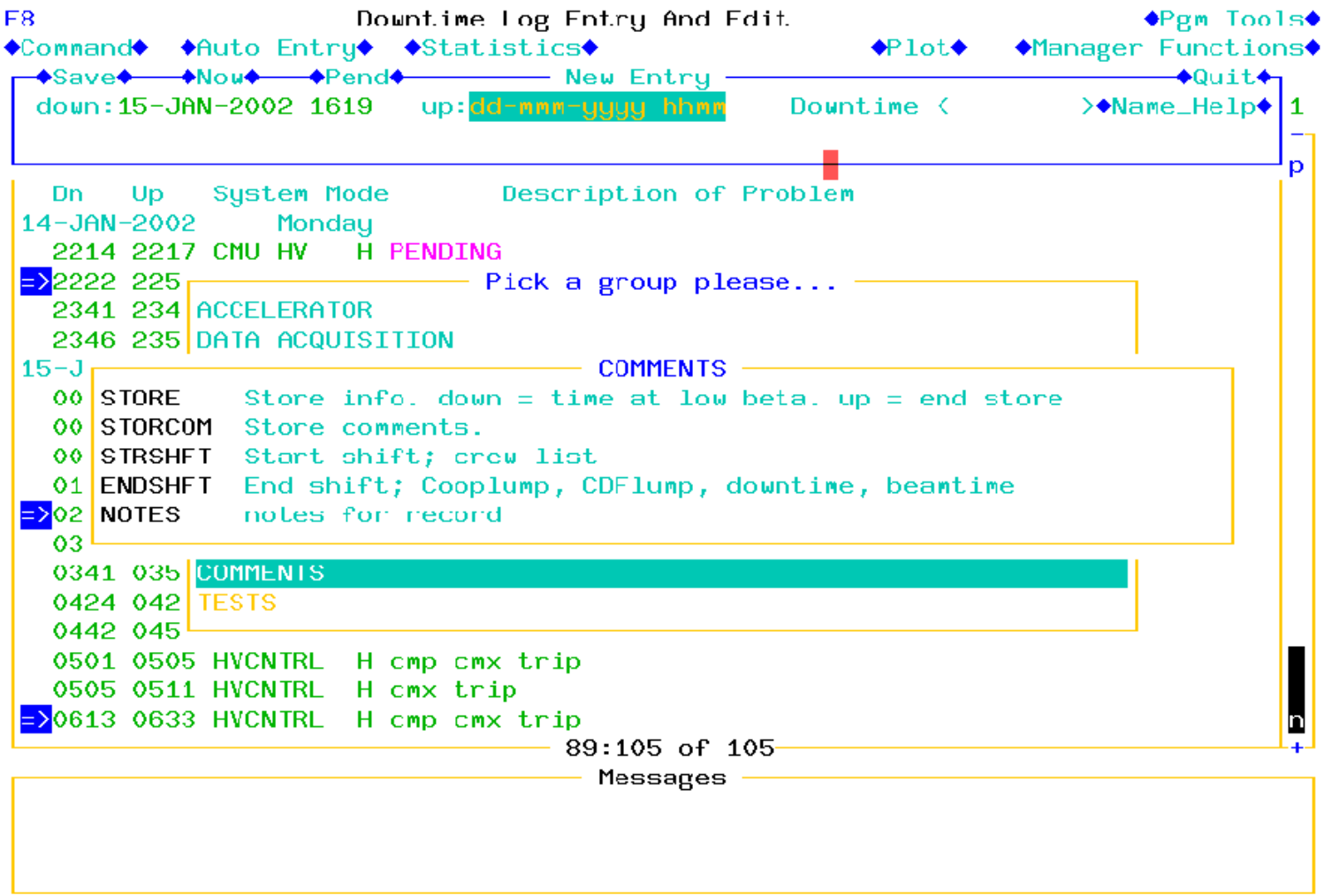
- How to make real-time plots using E-Z writer E11
- How to make plots of historical data using the Lumberjack data logger page D44
- How to paste plots in the eLog
- How to record SVRAD totals at beginning of store
- How to make a BLM summary plot after a beam incident.
- How to use the Downtime Logger E8
  - For categorizing auto-entries
  - For making a “Store” entry

Make sure “old” ACEs teach you these items. (This talk only includes 2 slides on Downtime Logger.)

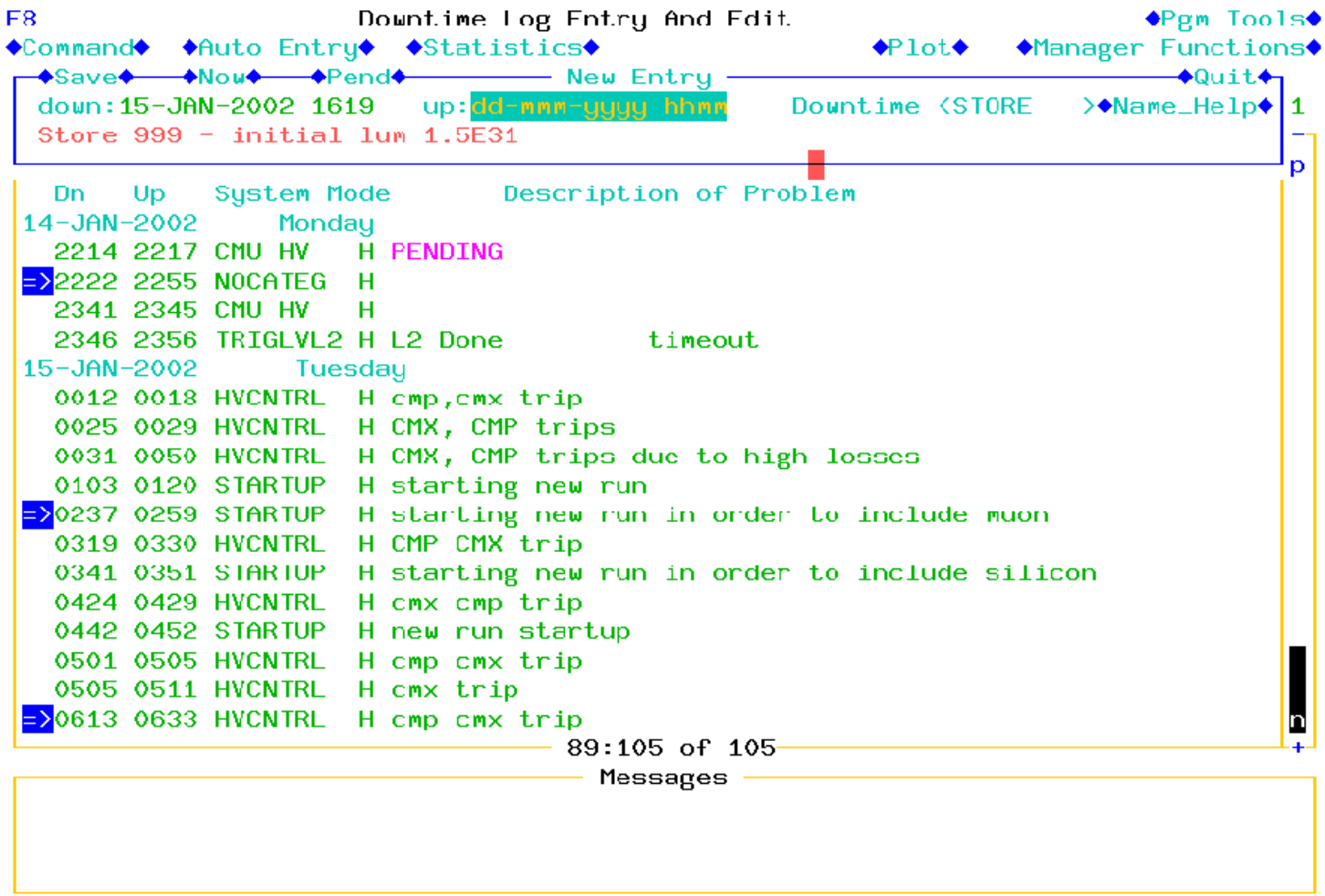
Page E8 - CDF Downtime data Logger

- When data-taking stops for more than 2 minutes, an entry is generated automatically.
- Shift crew must edit to categorize downtime (HV, DAQ, Trigger, Level3, etc etc)
- VERY important to categorize downtime according to the underlying cause. (Just because the DAQ system stops taking data doesn't mean DAQ is the cause.)
- VERY important to do this on your shift while you have a good memory of the problems that led to downtime. Involve the SciCo is necessary.
- Allows for downtime accounting later

When a new store goes in, enter as COMMENT. Not an auto entry, so use ADD ENTRY



DOWN time is when scraping is complete (t_0 for start of the store). Fill the UP time at the end of store. COMMENT should include store # and initial luminosity.



ACNET resources

Refer to links under “ACNET-Beam” on the Monitoring Ace “IFIX/Detector info/Recovery” page..

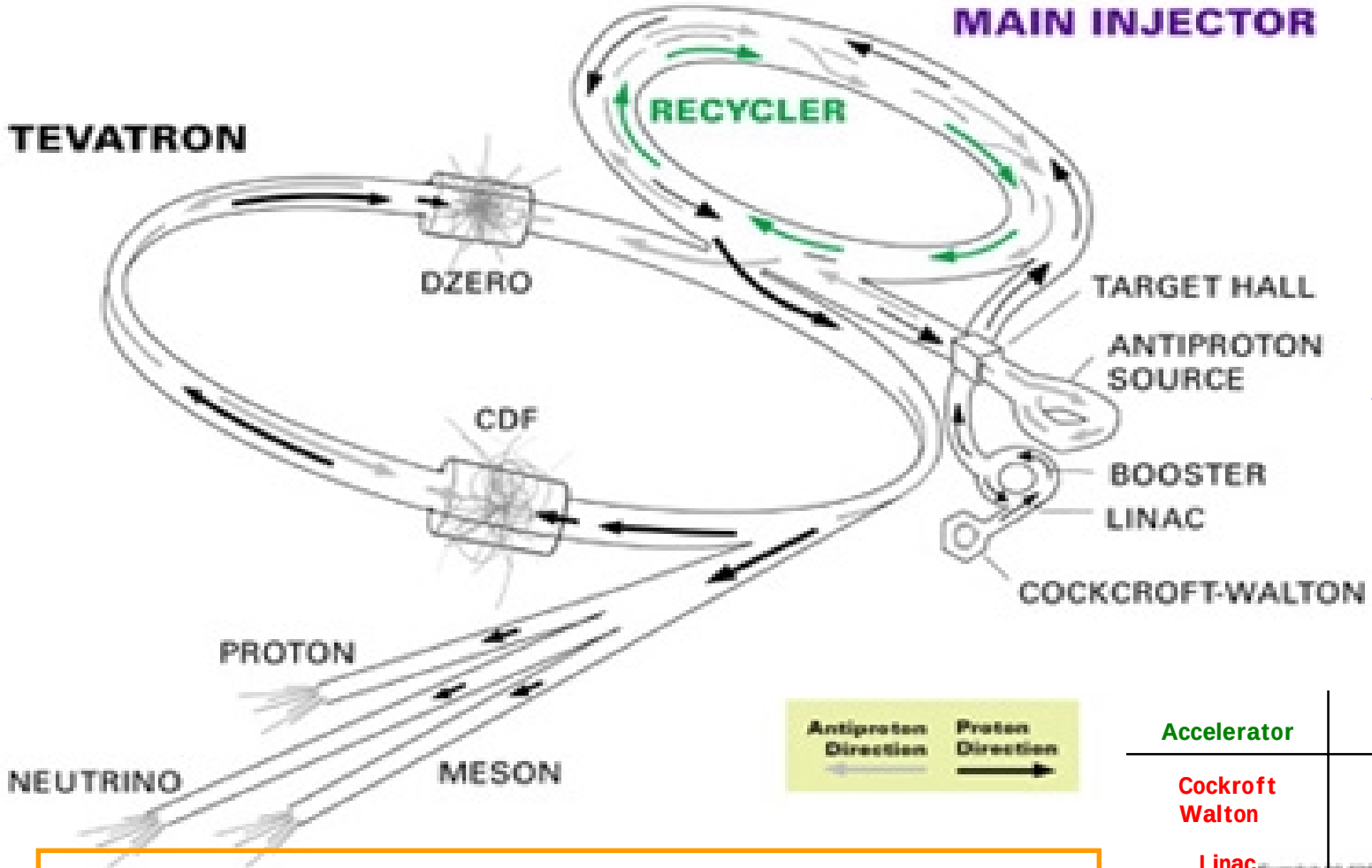
http://www-cdfonline.fnal.gov/mcs/mondoc.html .

The above pages may not be completely up-to-date but are certainly worth reading if you have slow time during a shift.

Shift crew resources:

- Bug your overlap ACE buddy, operations manager, JJ, and Steve Hahn !

SHOT SETUP



Debuncher &

Accumulator

Accelerator	Energy
Cockroft Walton	750 keV
Linac	400 Mev
Booster	8 GeV
Main injector	150 GeV
TEVATRON	980 GeV

Ron Moore will be giving a talk on the accelerator complex during upcoming Tuesday morning Ace Meeting.

Shot Setup Terminology

- **Stacking –** Production and collection of antiprotons into the Accumulator. This operation can take place independent of the Tevatron.
- **Shot Setup** – the sequence of events leading to antiproton shots. Typically takes about 2 hours. Ideally would take much less.
- **Shot** – the injection of antiprotons from the Accumulator into the Main Injector and on into the Tevatron in preparation for colliding beams operation.
- **Store** – when there is a steady p, pbar beam present in the Tevatron
  - Numbered sequentially
  - Typically lasts 12-36 hours
  - Can sometimes end abruptly
- In the best of times, CDF takes data continually with a 1-2 hour break once a day to end a store, take some calibrations, and start the next store.

Shot setup checklist

- **Shot Setup Checklist** is **comprehensive** set of instructions to follow in preparation for a shot and data taking.
- **Special Instructions – Always** check the "White Board" for exceptions and special instructions to follow.
- Current version of checklist is linked from DAQ Ace help page. Please tell Ops Manager about anything that is confusing in the checklist or anything that needs updating.
- **Shot Setup Flowchart** helps DAQ Ace minimize lost beam time during startup. (not currently up-to-date or heavily used)

Shot setup checklist

Please print out at least one copy at beginning of every shot setup.

CDF Shot Setup Check

NOT CURRENT VERSION

date_____ Store#_____

http://www-cdfonline.fnal.gov/opshelp/ShotSetupChecklist_v28.html
Revised 16 June-2003

Instructions:

- Use this checklist during shot setup. File completed this form in a Shot Setup folder.
- Record entries in the shift elog.
- Recording times in the boxes is useful when communicating information during shift changes.

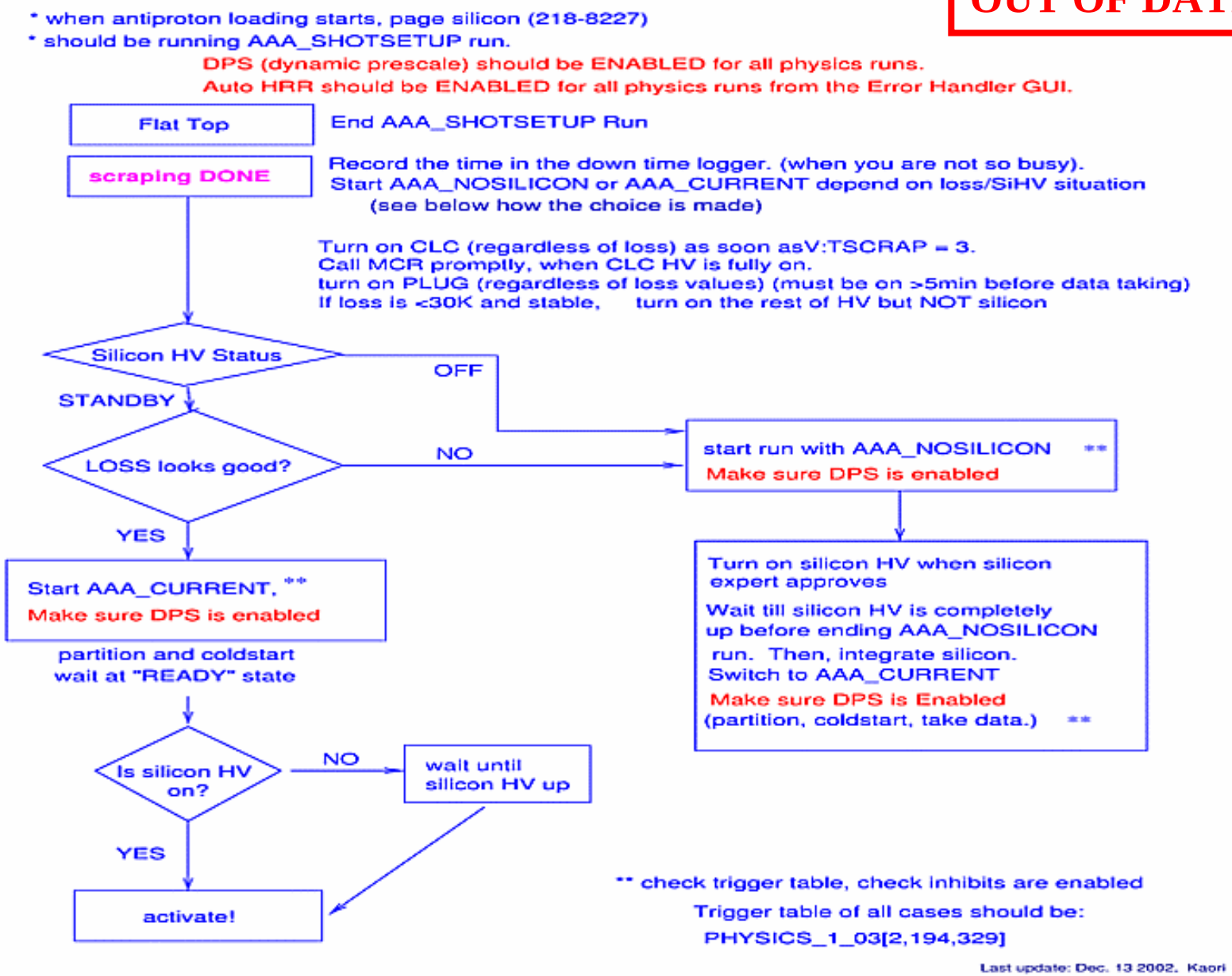
1) Before a store (Many steps can be performed simultaneously.)

Etc...

www-cdfonline.fnal.gov/opshelp/shotsetup_flow.ps

shotsetup flow chart (with Silicon)

OUT OF DATE



Store Finale

- At the end of a store:
  - The Main Control Room (MCR) should notify CDF in advance of planned beam dumps.
  - End data taking run
  - Before the store is dumped, ramp down high voltage (allow 5 minutes)
  - SciCo notifies MCR that CDF is ready for store to be terminated.
- For stores that end abnormally with a beam incident:
  - *Usually* what is done is done. If beam is **gone**, most damage is done and you do not have to react instantaneously to problems.
  - Make sure you follow silicon “post quench checkout procedures” http://www-cdfonline.fnal.gov/~svxii/runii/quench.html .

Like to sing or play an instrument – even if you can not? Talk to Steve about the CDF band – DSDII.

CDF RUN TOO!

Like to run even if you can not? Talk to JJ about the CDF "running club" RUN TOO!